

SOME ACARINA MESOSTIGMATA FROM THE GREAT BARRIER REEF.

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(Twenty-seven Text-figures.)

[Read 26th September, 1956.]

Synopsis.

A collection of sixteen species of monogynaspid mesostigmatic mites from nine families is described from Low Isles on the Great Barrier Reef. Ten species and one neoparasitid genus are described as new; the families Liroaspidae, Rhodacaridae, Eutrachytidae and Urodinychidae, and a pseudoparasitid genus are recorded from Australia for the first time. Illustrations of all sixteen species are given.

The following are described as new: *Epicroseius porosus*, n. sp. (Liroaspidae); *Rhodacarus marksae*, n. sp. (Rhodacaridae); *Gamasiphis (Laelaptiella) mackerrasae*, n. sp. *Austrogamasellus camini*, n. g., n. sp. (Neoparasitidae); *Hypoaspis womersleyi*, n. sp., *Haemolaelaps machaeratus*, n. sp., *Cosmolaelaps multisetosus*, n. sp. (Laelaptidae); *Eutrachytes simplicior*, n. sp. (Eutrachytidae); *Trigonuropoda terrae-reginae*, n. sp., *Urodiaspis novae-hollandiae*, n. sp. (Urodinychidae).

In August, 1954, a party of scientists sponsored by the Great Barrier Reef Committee went to Low Isles (145° 34' E., 16° 23' S.) to investigate the condition of the reef and to collect on the island. Drs. E. N. Marks and M. J. Mackerras forwarded their collections of mites to me for preliminary sorting, and the Mesostigmata are described below, comprising sixteen species from nine families, belonging to all three cohorts of the super-cohort Monogynaspida. No Triginaspida were taken. More than twenty species from other suborders were also taken, and will be described by other workers.

Two areas were collected—a sandy cay with plentiful low vegetation and trees, and a mangrove flat ("Green Ant Is."), parts of which are now permanently above high-water mark. A detailed description of these areas may be found in Stephenson *et al.* (1931). All specimens were taken from organic debris, e.g. under rotting pieces of wood, or in leaf mould, particularly from under the native cabbage, *Scaevola Koenigii* Vahl. (Goodenovieae). The material was placed directly into plastic bags, and the mouths firmly tied. On return to the field laboratory, the contents were extracted in a Salmon-type portable funnel for some hours, the mites and other small arthropods dropping down into a tube of spirit placed under the funnel.

The types and half the paratypes of the new species, and half the specimens of already described species, are deposited in the Queensland Museum, Brisbane. The remainder of the material has been distributed between the following: University of Queensland, Brisbane; Queensland Institute of Medical Research, Brisbane; South Australian Museum, Adelaide; British Museum (Natural History), London; United States National Museum, Washington; and the Chicago Academy of Sciences, Chicago. Detailed collection data are given with each species.

The lengths and breadths given are those of the idiosoma, including any projections, but excluding setae.

Cohors LIROASPINA.

Family LIROASPIDAE.

Genus EPICROSEIUS Berlese.

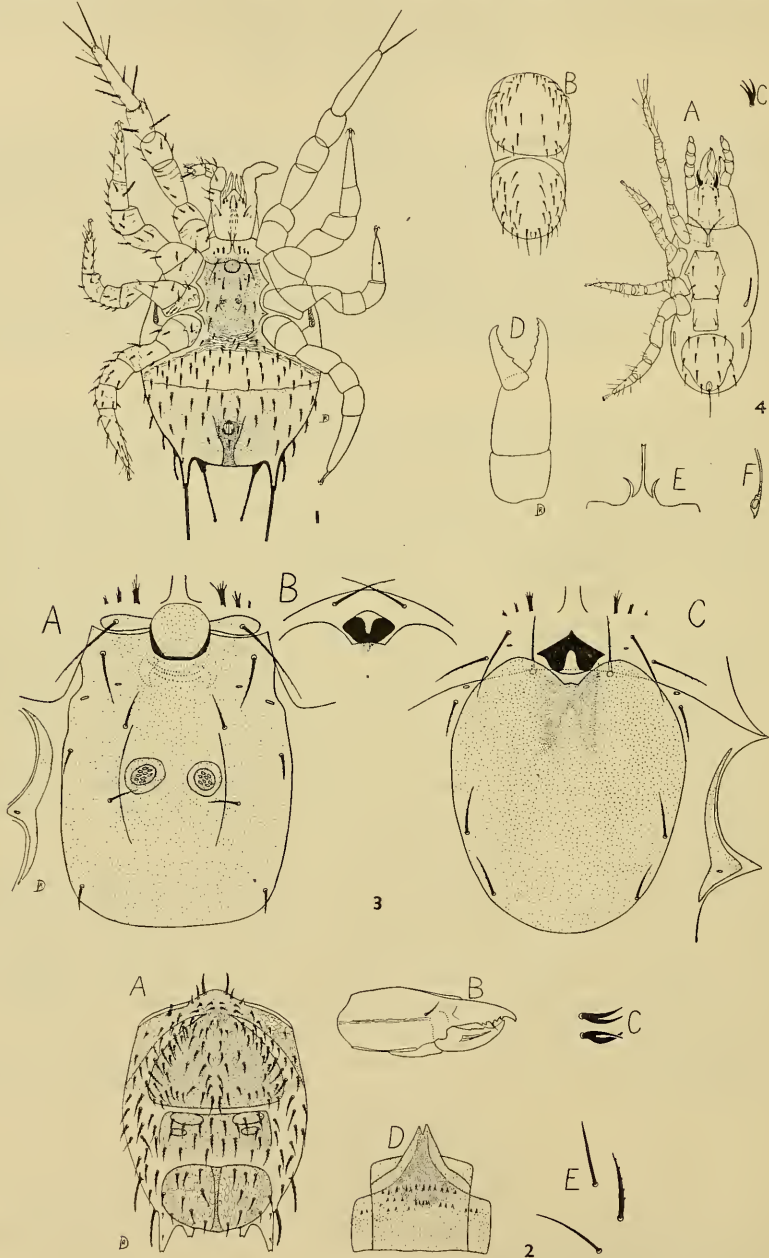
EPICROSEIUS POROSUS, n. sp.

Types: Holotype male and allotype female from under rotting log, Green Ant Is., 14.viii.54, E.N.M. and M.J.M. coll.

Male.

A large, brown, heavily sclerotized species, 685 μ long, 482 μ wide. Dorsum (Text-fig. 2, A) flat, with three shields. Anteromedian shield strongly convex anteriorly, and almost straight posteriorly, with about twenty pairs of setae; fused anteriorly to

narrow peritremal shield with about twelve pairs of setae. Small bridge of sclerotized cuticle between peritremal shield and posterolateral corners of anteromedian shield, forming a cleft with numerous strong setae. Mid-dorsal shield transverse and rectangular, entirely covered by striated cuticle, except for four small transverse exposed



Text-figures 1-4.

1.—*Epicroseius porosus*. Venter of male. 2.—*Epicroseius porosus*. Adult. A, Dorsum; B, Chelicera; C, Tined seta on palpal tarsus; D, Tectum; E, Hypostomal setae. 3.—*Epicroseius porosus*. A, Male sternogenital complex; B and C, Female sternogenital complex. 4.—*Rhodacarus marksae*. Female. A, Venter; B, Dorsum; C, Tined seta on palpal tarsus; D, Chelicera; E, Tectum; F, Peritreme.

areas; with about twenty setae. Posterior dorsal shield slightly convex anteriorly, oval, with sclerotized median longitudinal strip without setae, which is continuous with similar ventral strip behind anus; lateral margins well sclerotized, with about two setae on each side; remainder reticulated, with about seven pairs of setae. Posterior angles of body each with two projections, of which the exterior pair are the larger; each with very strong seta (to 184μ long). Dorsal cuticle with about 30 setae, of which two posterolateral pairs are large, to 140μ long, and placed on small tubercles. All dorsal setae heavily ciliated on each edge, with ciliations becoming shorter apically, except for most of setae on third dorsal shield, which are almost smooth and spiniform.

Venter (Text-fig. 1): Tritosternum with stout base (flanked by six spiny processes) which divides into two laciniae, each with three ciliated branches. Sternal setae I on transverse sclerotized zone, while II and III are on single shield which extends back to level of coxae IV, having four pairs (five in one specimen) of extra setae. On this shield (Text-fig. 3, A) are two sub-circular areas with small elongate pores. Sternal pores between sternal setae II and III, metasternal pores normal. Spiracle between coxae III and IV, with peritreme running forward and turning onto dorsum. Genital aperture between sternal setae I and II, covered by nude circular plate. Wrinkled, weakly sclerotized zone behind coxae IV, followed by normal striated cuticle, and then a broad ventri-anal shield, with setae similar to those on dorsum. Anal area normal in shape, with usual three setae, extending back to meet median strip of third dorsal shield.

Gnathosoma: Palpi with tarsus and tibia not distinctly separated; sensory seta on tarsus 2-tined (Text-fig. 2, C). Labial cornicles weak. Only three pairs of sub-equal hypostomal setae present (Text-fig. 2, E), as in *E. zimmermani*. Chelicerae (Text-fig. 2, B) with fixed digit slightly longer than movable digit, with four fairly strong teeth and simple pilus dentarius. Movable digit with one strong tooth, flanked by fine serrations. With simple seta externally near base of fixed digit. Tectum (Text-fig. 2, D) triangular, with apex deeply notched; with numerous small spiniform processes basally.

Legs with setation similar to body setae, except on distal halves of tarsi, and most segments with narrow, roughened strips on the cuticle. Tarsus I slender, with strong setae, and without any ambulacral apparatus; apex with two long setae ventrally, and several very small, fine setae dorsally. Other tarsi with normal ambulacrum and two claws.

Female.

Of similar facies dorsally to male, length 730μ , breadth 530μ .

Venter as in male except for sterno-genital area. All three pairs of sternal setae free, without obvious sternal sclerotization. Genital setae placed behind fold in body wall. Epigynial shield heart-shaped, broadly rounded posteriorly, sclerotized more heavily near anterior indentation, and with two pairs of setae. Genital aperture with movable, strongly sclerotized structure, which varies in position as shown (Text-fig. 3, B and C). Ovum single and broadly oval.

Nymph.

Similar to adult, except that posterior longitudinal strip is not well developed, and mid-dorsal shield is absent. Setae of terminal process much longer relatively, to 225μ long, while one seta in front of these processes is also very long, to 212μ . Only three pairs of hypostomal setae present.

Remarks.

The status of the four species of *Epicroseius* described by Berlese (summarized by Vitzthum, 1939, and Trägårdh, 1953) is still uncertain, and I am not prepared to identify my specimens with any of them. The only fully described species is *E. zimmermani* Trägårdh, 1953, which may readily be separated from the present species by the number of setae on the male sterno-genital shield, and the nature of the hypostomal setae and tectum. The species name indicates the porose areas on the male sterno-genital shield, which are not present in *E. zimmermani*. This is the first record of the family from Australia.

Material examined: The types, six paratype males, four paratype females, and thirteen morphotype nymphs, from leaf mould on cay, 19.viii.54, and Green Ant Is., 24.viii.54, E.N.M. coll., and from under rotting log, Green Ant Is., 14.viii.54, E.N.M. and M.J.M. coll.

Cohors GAMASINA.

Family RHODACARIDAE.

Genus RHODACARUS Oudemans.

RHODACARUS MARKSAE, n. sp.

Type: Holotype female from leaf mould, Green Ant Is., 24.viii.54, E.N.M. coll.

Female.

A minute, very weakly sclerotized species, 302 μ long, 144 μ wide, with well-marked constriction just behind level of coxae IV. Dorsum (Text-fig. 4, B) with two sub-circular shields, the anterior with distinct shoulders and 23 pairs of simple setae, the posterior with nineteen pairs, of which inner posterior pair are weak, and adjacent pair much stronger.

Venter (Text-fig. 4, A): Tritosternum with narrow base and two ciliated laciniae. Sternal and metasternal shields completely fused, with four pairs of setae. Only sternal pores evident. Area between anterior margin of sternal area and base of tritosternum weakly sclerotized. Genital shield quadrate with a pair of setae near posterior corners. Ventri-anal shield well developed, broader anteriorly, and with four pairs of setae in addition to three anal setae, of which post-anal is longer than adanals. Ventral cuticle with four setae, of which two are very close to anterior margin of ventri-anal shield. Metapodal plates simple and elongate. Peritreme (Text-fig. 4, F) short, lying above coxae III; stigmata comma-shaped.

Legs slender, with very weak setation; coxal formula 2, 2, 2, 1. Tarsi I without ambulacra or claws, but with rather long apical hairs. All other tarsi with ambulacra and claws.

Gnathosoma: Chelicerae (Text-fig. 4, D) very large and heavily sclerotized; both digits with strong teeth and serrations. Sensory seta on palpal tarsus three-tined (Text-fig. 4, C). Tectum (Text-fig. 4, E) with three elements, laterals crescentic and curved outwards, and mucro longer, and shortly bifurcate apically; shoulders very slightly serrate.

Remarks.

The new species may be readily separated from the genotype, *Rhodacarus roseus* Oudemans, 1902, by the shape of the tectum and ventral shields. *R. pallidus* Hull, 1918, is stated by Halbert (1920) to have claws on tarsus I; if this is correct, it should be placed in either *Rhodacaropsis* or *Rhodacarellus* as defined by Willmann (1935). This is the first record of the family from Australia. I have pleasure in naming this species for one of the collectors of this interesting material.

Material examined: The holotype is unique.

Family ASCAIDAE.

Genus ASCA von Heyden.

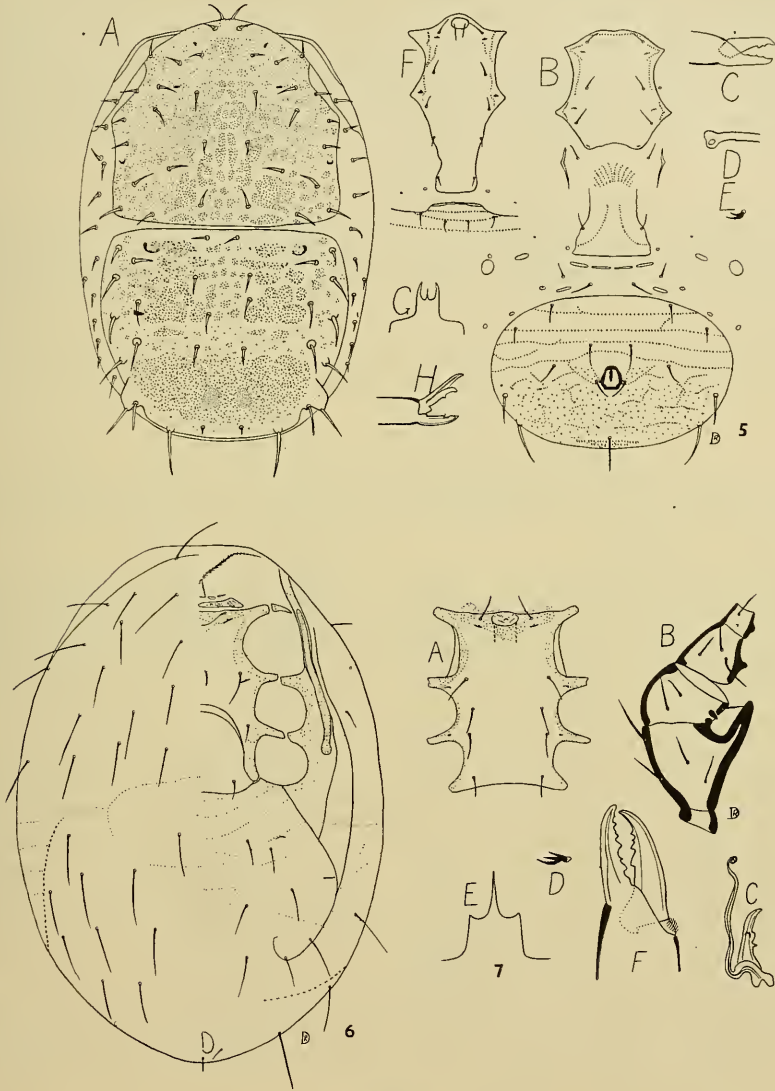
ASCA MAJOR Womersley, 1956.

Male.

As this sex was not known to Womersley, it is described here. Of similar facies to female dorsally and posteroventrally, but smaller, 396 μ long. Sternal, metasternal and genital shields fused to form holovenal shield (Text-fig. 5, F), which is strongly convex anteriorly, and narrow and weakly defined posteriorly; with usual five pairs of setae and three pairs of pores; with two pairs of pores in ventral cuticle opposite posterior corners. Ventri-anal shield (Text-fig. 5, F) with small flat anterior projection bounded by four small setae; four transverse lenticular shields fused to anterior edge of this projection. Fixed finger of chelicerae (Text-fig. 5, H) with two teeth and small pilus dentarius; movable finger with single tooth; spermatophore carrier straight and slightly longer than movable finger.

Remarks.

The specimens have been compared with the holotype. Apparently the species is widespread in the State, as the previous record was from S.E. Queensland. The specimens labelled as paratypes of this species in this Institute comprise two species, but fortunately the holotype conforms to the published description.



Text-figures 5-7.

5.—*Asca major*. Female. A, Dorsum; B, Venter; C, Chelicera; D, Basal portion of pretreme; E, Tined seta on palpal tarsus. Male. F, Venter; G, Tectum; H, Chelicera. 6.—*Gamasiphis (Heteroiphis) australicus*. Female. Dorsum on left, venter on right. 7.—*Gamasiphis (Heteroiphis) australicus*. Male. A, Sternogenital complex; B, Femur, genu, tibia and basitarsus II; C, Spermatophore carrier; D, Tined seta on palpal tarsus. Female. E, Tectum; F, Chelicera.

Material examined: Twenty females, one male and one nymph from leaf mould on cay, 14 and 19.viii.54, and Green Ant Is., 24.viii.54, E.N.M. coll., and from leaf mould, Low Is., viii.54, M.J.M. coll.

Family NEOPARASITIDAE.

Genus GAMASIPHIS Berlese.

Subgenus HETEROIPHIS Trägårdh.

GAMASIPHIS (HETEROIPHIS) AUSTRALICUS Womersley, 1956.

Male.

As this sex was unknown to Womersley, it is described here. Of similar facies to female dorsally and posteroventrally, 388μ to 402μ long. Holventral shield (Text-fig. 7, A) with usual five pairs of setae and three pairs of pores; both anterior and posterior margins slightly concave. Leg II (Text-fig. 7, B) with small rounded process on metatarsus and tibia, a small pointed process on genu, and a very large process on femur. Spermatophore carrier (Text-fig. 7, C) elongate, sinuous, and delicately coiled apically.

Remarks.

The specimens have been compared with the holotype. The only other record is from South Australia. Attention is drawn to the two pairs of pores and the disposition of the striations on the ventri-anal shield, and the transverse oval marking on the dorsum which gives rise to the oblique sutures characteristic of the subgenus (Text-fig. 6).

Material examined: Seven females and three males from leaf mould on cay, 14 and 19.viii.54, E.N.M. coll., and from leaf mould, Low Is., viii.54, M.J.M. coll.

Subgenus LAELAPTIELLA Womersley.

GAMASIPHIS (LAELAPTIELLA) MACKERRASAE, n. sp.

Types: Holotype female and allotype male from leaf mould on cay, 19.viii.54, E.N.M. coll., and Green Ant Is., 24.viii.54, E.N.M. coll. respectively.

Female.

A small, brown, well-sclerotized species, 366μ long, 235μ wide. Dorsum (Text-fig. 8, B) completely covered by single dorsal shield, which encroaches slightly ventrally, and fuses posteriorly with the ventri-anal shield; evenly sclerotized except for numerous circular plain areas; with about 33 pairs of simple setae, and pair of distinct marginal pores just behind level of peritreme.

Venter (Text-fig. 8, A): Prae-endopodal plates present. Sternal shield about as long as broad, with sternal setae I and II and pores in normal position. Sternal setae III close together medially. Metasternal complex fused completely to posterolateral corners of sternal shield. Endopodal shield IV free, and well developed. Exopodal shields fused and extended behind coxae IV. Genital shield convex anteriorly, and noticeably broadened basally behind coxae IV; with a single pair of genital setae. Metapodal shield simple and placed in between genital, exopodal and ventral shields. Ventri-anal shield broad, extending from just behind genital shield to end of body, where it fuses with dorsal shield; with transverse lines and seven pairs of setae in addition to three anal setae. Peritreme as illustrated, Text-fig. 9, F.

Gnathosoma (Text-fig. 8, C) short and broad basally, with palpi relatively long and slender. Sensory seta on palpal tarsus 3-tined (Text-fig. 9, C). Chelicerae (Text-fig. 9, G) simple; movable finger with three teeth, fixed finger with three larger teeth and simple pilus dentarius.

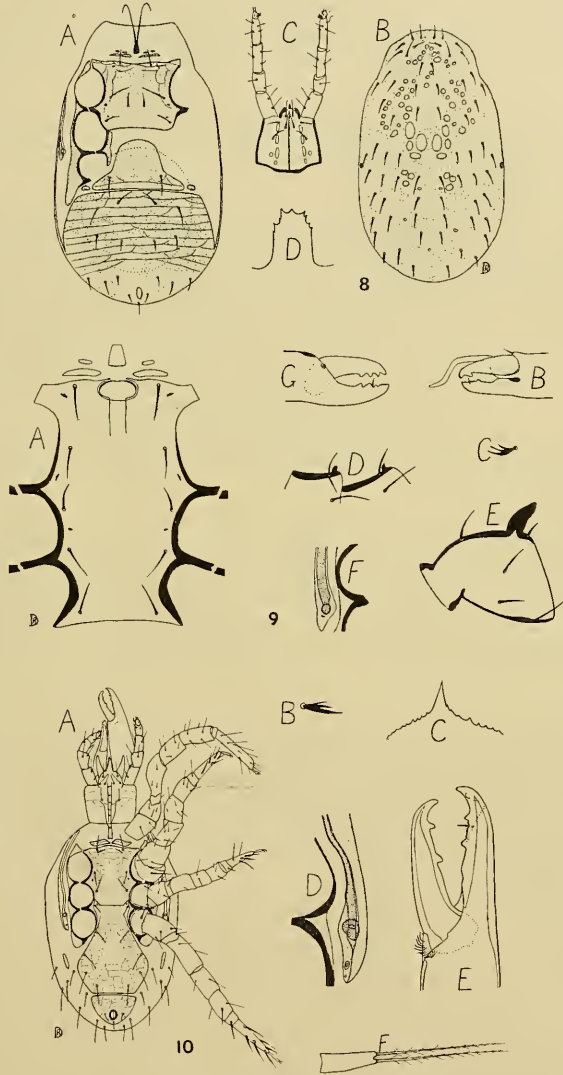
Male.

Essentially as in female, length 347μ breadth 212μ . Sternal, metasternal, endopodal and genital areas all fused (Text-fig. 9, A). Ventri-anal shield free. Leg II (Text-fig. 9, D and E) with large process on femur and smaller process on genu and tibia. Chelicerae (Text-fig. 9, B) with slender, curved spermatophore carrier. Tectum (Text-fig. 8, D) with three anterior and three pairs of lateral points.

Remarks.

Womersley (1956) placed this subgenus as a genus of the family Ascacidae. However, both the holotype and paratype show a three-tined sensory seta on the palpal

tarsus, and this, together with many other characters, places it as a *Gamasiphis*. *Laelaptiella* is closest to the subgenus *Gamasiphoides* Womersley, 1956, but may be separated on the nature of the peritremal and exopodal shields. The new species may be recognized by the shape of the tectum, and the relatively wider genital shield. I have pleasure in naming this species for one of the collectors of this varied material.



Text-figures 8-10.

8.—*Gamasiphis (Laelaptiella) mackerrasae*. Female. A, Venter; B, Dorsum; C, Gnathosoma, ventral view. Male. D, Tectum. 9.—*Gamasiphis (Laelaptiella) mackerrasae*. Male. A, Sternogenital complex; B, Chelicera; C, Tined seta on palpal tarsus; D and E, tibia, genu and femur II. Female. F, Basal portion of peritreme; G, Chelicera. 10.—*Austrogamasellus canini*. Female. A, Venter; B, Tined seta on palpal tarsus; C, Tectum; D, Basal portion of peritreme; E, Chelicera; F, Tritosternum.

Material examined: The types, eleven paratype females and ten paratype males, all with same collection data as types.

Genus AUSTROGAMASELLUS, n. g.

Genotype: *Mysolaelaps stigmatus* Fox, 1946, Puerto Rico, by present designation.

Diagnosis: As in *Austrogamasus* Womersley, 1942, except that four pairs of genito-ventral setae are present instead of a single pair of genital setae.

By the courtesy of Dr. Irving Fox, I have been able to examine a specimen of *Mysolaelaps stigmatus*; it is not a *Mysolaelaps*, nor even a laelaptid, but a true neoparasitid, having a three-tined sensory seta on the palpal tarsus.

AUSTROGAMASELLUS CAMINI, n. sp.

Type: Holotype female from leaf mould on cay, 14.viii.54, E.N.M. coll.

Female.

A light brown, fairly well-sclerotized species, 545 μ long, 326 μ wide. Dorsal shield covering entire dorsum, but not encroaching onto venter; with numerous slender setae and transverse reticulations.

Venter (Text-fig. 10, A): Tritosternum normal, as illustrated (Text-fig. 10, F). Two prae-endopodal plates present. Sternal shield longer than broad, with anterior margin convex and posterior margin flat; with usual three pairs of setae and two pairs of pores. Metasternal complex represented only by seta and pore. Genito-ventral plate expanded behind coxae IV and reaching to anterior edge of anal plate, with four pairs of setae and markings as shown; with a pair of small pores just behind genital setae. Anal plate flat anteriorly and deeply rounded behind, with anus and three small anal setae in posterior half. Metapodal plate elongate. Exopodal plate IV expanded posteriorly. Peritremal shield narrow, extending well forward; with two small pores in posterior corner (Text-fig. 10, D). Striated cuticle with about eight pairs of simple setae.

Legs fairly slender, with weak setation, except on tarsus IV.

Gnathosoma typical. Sensory seta on palpal tarsus distinctly three-tined (Text-fig. 10, B). Tectum rounded, with numerous short teeth and rather larger central spine (Text-fig. 10, C). Chelicerae (Text-fig. 10, E) well developed, with clump of setules at base of movable finger, which has two strong teeth; fixed finger with two teeth flanking small serrations and pilus dentarius; pitted to receive apical tooth of movable finger.

Remarks.

The following details of the genotype should be noted: the genito-ventral shield is without linear markings except marginally; the tectum is evenly rounded, with numerous equal small points; and the sternal shield rather more pointed posteriorly than illustrated by Fox. The new species may be separated on all three characters. I have pleasure in naming this species for Dr. J. H. Camin for much kind advice during the preparation of this paper.

Material examined: The holotype and one paratype female, both with same collection data.

Family PSEUDOPARASITIDAE.

Genus SESSILUNCUS Canestrini.

SESSILUNCUS HETEROTARSUS (Canestrini, 1897).

Remarks.

See Text-figs. 11 and 12. Although the present specimens are slightly different (in the armature of leg II and in pretarsus I) from the illustrations given by Vitzthum (1926), I have no hesitation in placing them as this species.

The following characters are considered to be important in assigning specimens to this genus: the characteristic excavation of the anterior margin of the sternal shield to accept the base of the tritosternum; the disposition of the dorsal and ventral shields; the characteristic markings of the sternogenital shield; the unusual outgrowths of the peritremal tube; perhaps pretarsus I is retractile to some extent.

It might be worth adding a translation of Vitzthum's (1926) remarks: "There are now four *Sessiluncus* species known. Only the Italian *Gamasellus* (*Sessiluncus*)

eremita Berlese, 1918 (*Redia*, 13: 137) is known from Europe. The two other previously known species, *G. (S.) latus* and *solitarius* Berlese, 1904 (*Redia*, 2: 168-169) are from Java. Of these, the first named has a rather strongly reduced pretarsus I. In *S. latus* and *solitarius*, pretarsus I is not only long and slender, but also two-clawed. Berlese has justly mentioned (*Redia*, 2: 168) that one must not be deceived by the name *Sessiluncus*, and consider the reduction of the pretarsus present in the type species to be a character peculiarly diagnostic for the subgenus." Vitzthum later (1935) described a further species which is closely related to *S. heterotarsus*. This is the first record of the genus from Australia.

Material examined: Two males and one female from leaf mould, Green Ant Is., 24.viii.54, E.N.M. coll.

Family PHYTOSEIIDAE.

Genus PLATYSEIUS Berlese.

PLATYSEIUS QUEENSLANDICUS, Womersley, 1956.

Remarks.

The specimen before me fits the illustrations of Womersley very closely indeed, the setation of the dorsal and ventral shields being identical. The chelicerae (not illustrated, as placed vertically) can be seen to have numerous small teeth on the fixed finger and two or three larger teeth on the movable finger. The tectum is slightly different, but still basically three-pointed. (See Text-fig. 13.)

Material examined: One female from leaf mould on cay, 19.viii.54, E.N.M. coll.

Genus HYPOASPIS Canestrini.

HYPOASPIS WOMERSLEYI, n. sp.

Types: Holotype female and allotype male from leaf mould on cay, 14.viii.54, E.N.M. and M.J.M. coll.

Female.

A small, pale, weakly sclerotized species, length 450 μ , width 233 μ . Dorsum with single shield with numerous slender setae; with a pair of large pores in posterior half, as illustrated, Text-fig. 14, F.

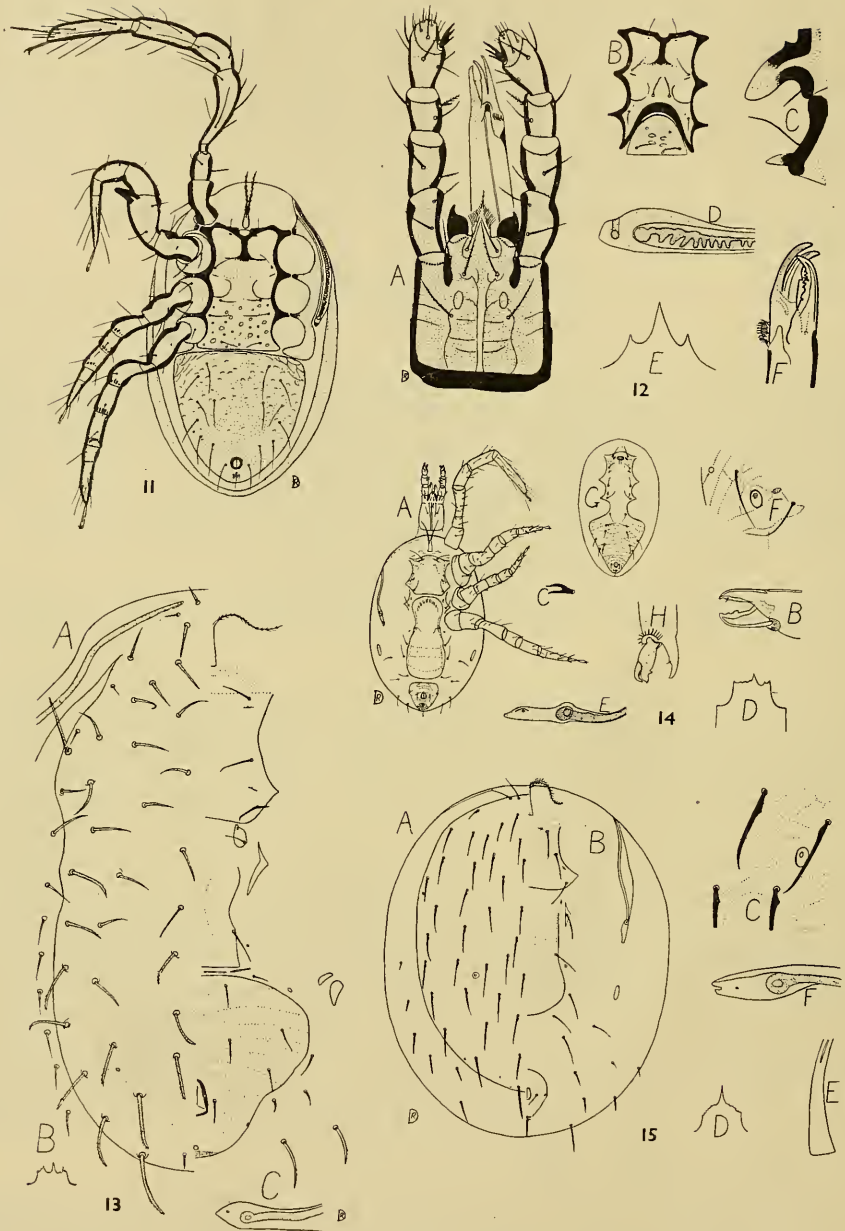
Venter (Text-fig. 14, A): Tritosternum typical. Cuticle between tritosternum and sternal shield slightly sclerotized. Sternal shield convex anteriorly, and almost flat posteriorly, with usual three pairs of setae, two pairs of pores, and anterior and lateral reticulations. Metasternal complex represented by seta and pore. Genital plate slightly expanded behind coxae IV, and extending almost to anal plate, with genital setae placed on small marginal prominences. Three further pairs of setae flank the plate, the anterior of which are placed opposite slight marginal indentations of the plate. Three transverse and two lateral lines are present on the posterior half of the plate, while another pair of lines enclose the bases of the genital setae. Anterior flap of genital plate almost reaching sternal shield. Anal plate triangular, with sides slightly rounded; with a pair of pores opposite the central anus. Unpaired anal seta longer than paired. Metapodal plates elongate. Ventral cuticle with about four pairs of simple setae in addition to the three pairs flanking the genital shield. Peritreme typical, as figured, Text-fig. 14, E.

Legs normal, with few slightly stronger setae on tarsi II to IV.

Gnathosoma typical. Sensory seta on palpal tarsus with two distinct tines (Text-fig. 14, C). Tectum (Text-fig. 14, D) with anterior edge irregularly dentate. Chelicerae (Text-fig. 14, B) with clump of setules at base of movable finger, which has two teeth. Fixed finger without distinct teeth, but with small pilus dentarius.

Male.

Of similar facies to female. Length 373 μ , width 218 μ . Holoventral shield typical, with five pairs of ventral setae, and transverse reticulations on ventral area (see Text-fig. 14, G). Femur II without spur, but with small spinose seta. Chelicerae (Text-fig. 14, H) with spermatophore carrier sharply bent apically; movable digit with single tooth; fixed finger with pilus dentarius on small elevation.



Text-figures 11-15.

11.—*Sessiluncus heterotarsus*. Male. Venter. 12.—*Sessiluncus heterotarsus*. Male. A, Gnathosoma in ventral view; C, Femur and genu II; D, Basal portion of peritreme; E, Tectum; F, Chelicera. Female. B, Sternogenital complex. 13.—*Platyseius queenslandicus*. Female. A, Dorsum on left, venter on right; B, Tectum; C, Basal portion of peritreme. 14.—*Hypoaspis womersleyi*. Female. A, Venter; B, Chelicera; C, Tined seta on palpal tarsus; D, Tectum; E, Basal portion of peritreme; F, Pore on posterior half of dorsal shield. 15.—*Haemolaelaps machaeratus*. Female. A, Dorsum; B, Venter; C, Pore on posterior part of dorsal shield; D, Tectum; E, Basal portion of tritosternum; F, Basal portion of peritreme.

Remarks.

This species is named for Mr. H. Womersley, Acarologist, South Australian Museum, for his teaching and his many kindnesses while I was in Adelaide.

Material examined: The types and one paratype female, all with same collection data.

Family LAELAPTIDAE.

Genus HAEMOLAEELAPS Berlese.

HAEMOLAEELAPS MACHAERATUS, n. sp.

Type: Holotype female from leaf mould on Green Ant Is., 24.viii.54, E.N.M. coll.

Female.

A pale brown, medium-sized species, 638 μ long, 498 μ wide. Dorsum (Text-fig. 15, A) with single, oval, reticulated shield, with about 36 pairs of setae, all of which are bladed except those at the extreme anterior and posterior. Posterior half of shield with pair of large, pore-like structures (Text-fig. 15, C). Striated marginal cuticle with about six pairs of setae, which increase in length posteriorly.

Venter (Text-fig. 15, B): Tritosternum with elongate base and two ciliated laciniae (Text-fig. 15, E). Area between tritosternum and sternal shield weakly sclerotized. Sternal shield with concave, indistinct anterior margin, and posterior margin weakly concave; with usual three pairs of setae, two pairs of pores, and anterior and lateral reticulatory lines. Metasternal pore free, and metasternal seta placed on small shield nearby. Genital shield with single pair of setae, with four transverse lines behind them, and forwardly directed lines in front. With small platelet just behind genital setae, and larger elongate-oval metapodal plates further out. Anal shield broadly rounded anteriorly and pointed posteriorly, with fine lines around the edge, and posterior barbules. Anus central, with unpaired anal seta stronger than the paired, which have a small pore opposite them on the margin of the shield. Striated cuticle with about ten pairs of setae. Peritreme (Text-fig. 15, F) with small notch and pore posteriorly on peritremal shield; extending forward onto dorsum almost to extreme anterior.

Legs without outstanding characters.

Gnathosoma typical. Chelicerae not clearly visible in unique specimen, but apparently normal. Tectum (Text-fig. 15, D) with single, sharply pointed mucro, flanked by small serrations. The nature of the sensory seta on the palpal tarsus is unknown, as the tarsi are missing.

Remarks.

The present specimen agrees with all the characters given by Strandtmann (1949) for the genus *Haemolaelaps* (including the characteristic pattern of lines on the genital plate) except that the dorsal setae are modified. It has the same general facies as the genotype, *H. marsupialis* Berlese, which is common in S.E. Queensland, and which has recently been illustrated in detail by Womersley (1955). The new species may readily be recognized by the nature of the dorsal setae. At first glance the bladed dorsal setae suggest *Cosmolaelaps* Berlese, but the two Pacific species, *C. serratus* Trägårdh, 1953, and *C. scimitus* Womersley, 1956, have a very different pattern of lines on the genital plate.

Material examined: The holotype is unique.

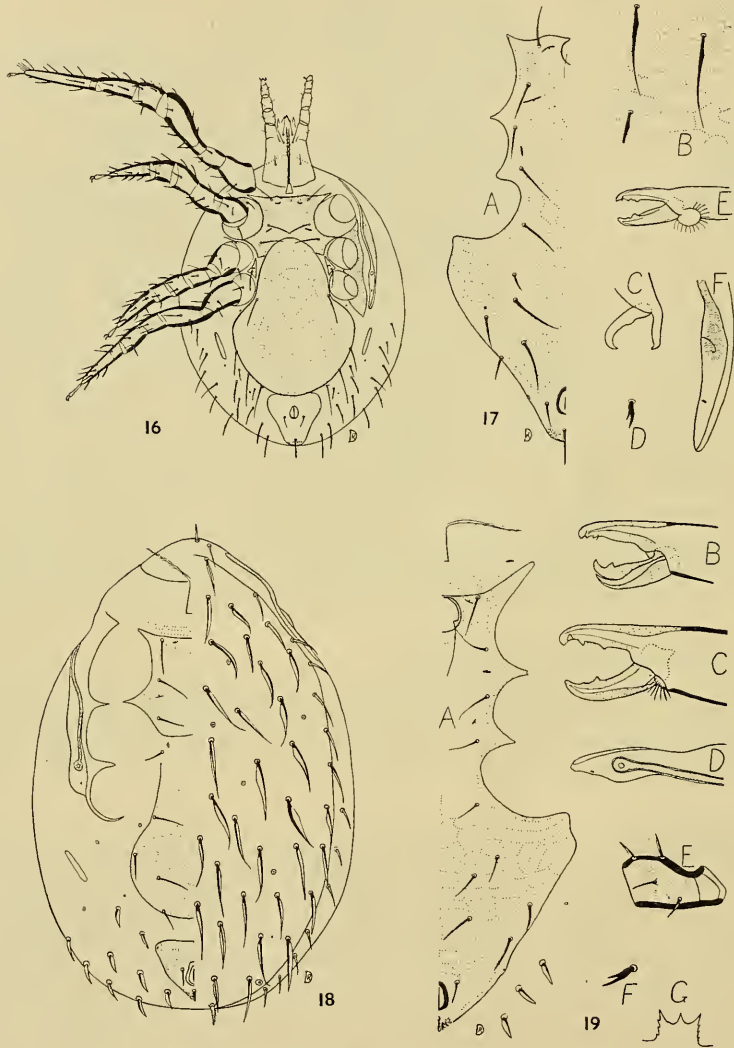
Genus LAELASPIS Berlese.

LAELASPIS VITZTHUMI (Womersley, 1956), n. comb.

Male.

As this sex was unknown to Womersley, it is described here. Of similar facies dorsally to female. Leg II not modified. Sternal, metasternal, genital, ventral and anal plates all fused to form holoverntal shield (Text-fig. 17, A), which is broadly expanded behind acetabula IV, and then tapers to posterior. With usual five pairs of sternal, metasternal and genital setae and three pairs of pores; also with usual three anal

setae, of which smaller paired adanal setae are set near level of middle of anus; with five pairs of ventral setae, of which the two inner pairs are much stronger than the others. With pattern of linear reticulations as shown, including two forwardly-directed concentric loops on discal portion of ventral area. Dorsal setae bladed (Text-fig. 17, B), as in female.



Text-figures 16-19.

16.—*Laelaspis vitzthumi*. Female. Venter. 17.—*Laelaspis vitzthumi*. Male. A, Holoventral shield; B, Portion of dorsal shield; C, Chelicera. Female. D, Tined seta on palpal tarsus; E, Chelicera; F, Basal portion of peritreme. 18.—*Cosmolaelaps multisetosus*. Female. Venter on left, dorsum on right. 19.—*Cosmolaelaps multisetosus*. Male. A, Holoventral shield; B, Chelicera. Female. C, Chelicera; D, Basal portion of peritreme; E, Femur IV; F, Tined seta on palpal tarsus; G, Tectum.

Remarks.

Womersley (1956) described three species as *Gymnolaelaps* Berlese (*G. vitzthumi*, *G. planus*, and *G. australicus*), but now (*in litt.*) agrees that they should be placed in *Laelaspis*. Berlese (1903) gives a comprehensive diagnosis and excellent figures of

Laelaspis, and also a good figure of the genotype of *Gymnolaelaps*. The status of *G. annectans* Womersley, 1955, is uncertain. (See Text-fig. 16.)

Material examined: Four males and two females from leaf mould on cay, 14 and 19.viii.54, E.N.M. coll.

Genus COSMOLAE LAP S Berlese.

COSMOLAE LAP S MULT ISETOSUS, n. sp.

Types: Holotype female and allotype male from leaf mould on cay, 14.viii.54, E.N.M. coll.

Female.

A medium-sized, well-sclerotized species, 590 μ long, 358 μ wide. Dorsal shield single, coarse textured, with reticulatory markings and numerous large pores arranged as shown; with about 40 pairs of large setae, all of which (except a few on anterior margin) have a heavily sclerotized central rib and transparent bladed edges (Text-fig. 18).

Venter (Text-fig. 18): Tritosternum typical; area between its base and sternal shield slightly sclerotized. Sternal shield about as wide as long, with both anterior and posterior margins slightly concave; with usual three pairs of sternal setae, two pairs of pores, and reticulate markings anteriorly and laterally. Metasternal complex represented by seta and pore only. Genito-ventral shield widened behind coxae IV, and broadly rounded posteriorly, with four pairs of setae and reticulate markings; with a pore just behind the genital setae. Anal plate triangular, with small pore in anterior corners. Anus slightly eccentric, flanked by three small anal setae. Metapodal plates elongate; with small platelet between them and exopodal shields IV, and a pore behind them. Striated cuticle with about nine pairs of short, broadly bladed setae. Peritremal shield narrow, fused to exopodal plate; with small pore in posterior corner (Text-fig. 19, D); peritreme extending forward to level of coxae II, where it passes on to dorsum, and extends almost to extreme anterior.

Legs stout, with short setae. Femur IV (Text-fig. 19, E) with two erect setae on anterior edge as described by Berlese (1903).

Gnathosoma typical. Sensory seta on palpal tarsus two-tined (Text-fig. 19, F). Tectum (Text-fig. 19, G) with three sub-equal anterior points and barbed lateral margins. Chelicerae (Text-fig. 19, C) also typical, with clump of setules at base of movable digit, which has one strong tooth. Fixed digit with two teeth and fine serrations; pitted to receive apex of other finger.

Male.

Of similar facies to female. Holoventral plate typical, with five pairs of ventral setae (Text-fig. 19, A). Chelicerae (Text-fig. 19, B) with fairly well-developed spermatophore carrier following curve of movable digit, which has one strong tooth; fixed digit with three smaller teeth apically.

Remarks.

The present species agrees very well with Berlese's (1903) rather detailed diagnosis for *Cosmolaelaps*, which makes no mention of the number of genito-ventral setae. All the species known to me have a single pair, whereas the new species has four. The pattern of reticulations on the genital plate should be compared with that typical for *Haemolaelaps* (Text-fig. 15, B).

Material examined: The types and six paratype females, all with same collection data.

Cohors UROPODINA.

Family EUTRACHYTIDAE.

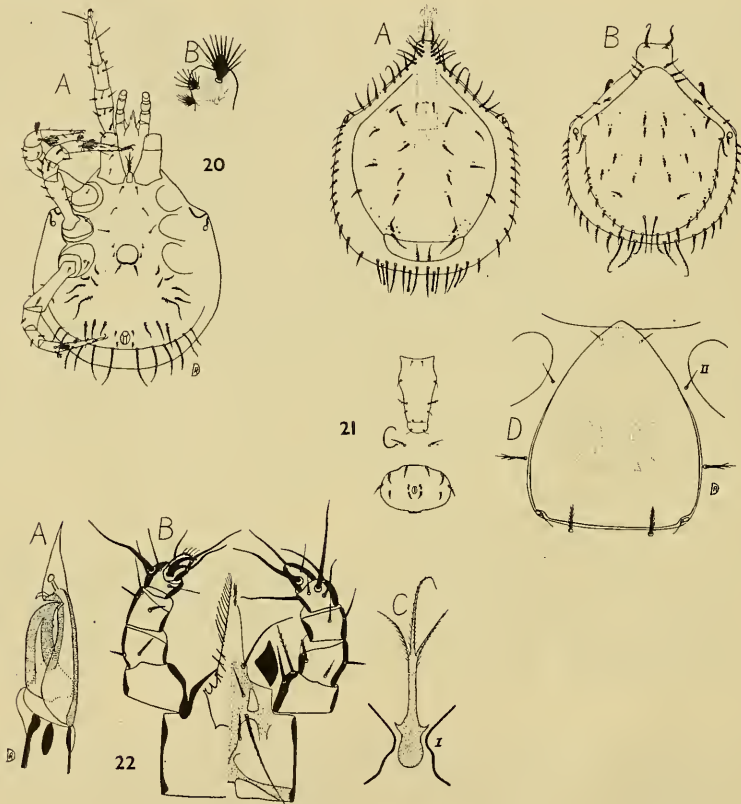
Genus EUTRACHYTES Berlese.

EUTRACHYTES SIMPLICIOR, n. sp.

Types: Holotype male and allotype female from under rotting log, Green Ant Is., 14.viii.54, E.N.M. and M.J.M. coll.

Male.

A brown, heavily sclerotized species. Dorsum (Text-fig. 21, A) with complete marginal shield, with shoulders bearing loops of peritremes; with blunt anterior process over gnathosoma. Marginal shield with single row of ciliated setae laterally and anteriorly; posterior edge with ten longer ciliated setae interspersed with four spatulate setae. Dorsal shield fused anteriorly with marginal shield; with about eleven pairs of setae and numerous pores, especially in posterior corners. Post-dorsal shield transverse, in close contact with surrounding shields; with a single pair of setae on posterior margin.



Text-figures 20-22.

20.—*Eutrachytes simplicior*. Male. A, Venter; B, Fan-shaped setae on tibiae. 21.—*Eutrachytes simplicior*. A, Male dorsum; B and C, Dorsum and ventral shields of nymph; D, Genital shield of female. 22.—*Eutrachytes simplicior*. Adult. A, Chelicera; B, Gnathosoma, dorsal view on left, ventral view on right; C, Tritosternum.

Venter (Text-fig. 20, A): Tritosternum (Text-fig. 22, C) with base between coxae I, and with three normal laciniae. All ventral shields fused, with sternal setae well developed. Genital operculum sub-circular and surrounded by six setae. About six pairs of ciliated setae behind coxae IV, and anus flanked by four small and six longer ciliated setae. A transverse row of twelve stout setae behind anus. Stigmata opposite coxae III, with peritremes looping over onto dorsal surface and then descending again to level of coxae II. Foveolae pedales absent.

Legs long and slender, without special setation, except for fan-like setae near the apices of tibiae II to IV (Text-fig. 20, B). Tarsus I with normal ambulacrum and claws.

Gnathosoma (Text-fig. 22, B): Camerostome not well developed. Hypostomal setae as follows: I short and barbed, II long and barbed, III short and simple, IV long and

simple. Labial cornicles stout. Palpal trochanter with one simple and one barbed internal seta. Palpal tibia and tarsus with strong setation; sensory seta on tarsus two-tined. Tectum with several long points basally; mucro heavily ciliated. Chelicerae (Text-fig. 22, A) very long; fixed digit with pointed hyaline process apically, with large pore; pitted to receive point of movable digit.

Female.

Similar to male, length 622μ , breadth 544μ . Genital shield (Text-fig. 21, D) large, extending forward to anterior margin of sternal area. Sternal setae I and II simple, III barbed. Metasternal complex fairly reduced. With pair of setae behind articulatory edge of genital shield.

Nymph.

Of similar facies to adult. Marginal cuticle from behind shoulders to posterior margin with single row of setae, of which the posterior four are longer. Marginal shield only represented by two pairs of platelets at shoulders and along antero-lateral margins, which have a single upwardly directed, strongly sclerotized hook. Anterior process with two setae. Dorsal shield with about 22 pairs of setae, of which the posterior four pairs are longer and stouter; most of these setae have a pore near their base. Post-dorsal shield absent. (See Text-fig. 21, B.)

Venter (Text-fig. 21, C) with elongate median shield bearing normal sternal, metasternal and genital setae; with transverse suture and two pores between metasternal and genital setae. Anal shield a broad transverse oval, with six pairs of setae, and row of barbules at posterior margin.

Remarks.

Only two species of *Eutrachytes* are known, *E. truncata* (Berlese, 1888) and *E. lata* Trägårdh, 1953. In the key given by Trägårdh, the new species is very close to *E. lata*, in not having a triangular outline, and being without projecting posterior angles, but may be separated by the simpler setal pattern on the anterolateral and posterior regions of the body, and by the pattern of the longer dorsal setae and pores. This is the first record of the family from Australia.

Material examined: The types and two morphotype nymphs, all with same collection data.

Genus DERAIOPHORUS Canestrini.

DERAIOPHORUS BIROI Canestrini, 1897.

Male.

A brown, heavily sclerotized species, 778μ long, 642μ wide. Dorsum (Text-fig. 23, A) with complete marginal shield, with well-developed shoulders (Text-fig. 24, A) bearing loops of peritremes, a pair of smaller 3-setose processes further back (Text-fig. 24, B), and a bifurcate anterior process with eight sinuous ciliated setae (Text-fig. 23, E). Marginal shield with scattered simple setae; posteriorly with transverse row of twenty setae of increasing length medially. Dorsal shield fused anteriorly with marginal shield, with about twenty pairs of simple setae and numerous pores (Text-fig. 24, E); with fairly distinct median furrow. The cast nymphal skins and debris are carried about on top of the animal as in *Eutrachytes*. Post-dorsal shield narrow and transverse, well separated from surrounding shields; with four setae and pores.

Venter: Tritosternum (Text-fig. 23, C) with its broad base placed between coxae I; with three normal laciniae. All ventral shields coalesced, and of typical facies. Genital aperture opposite coxae III. Foveolae pedales absent.

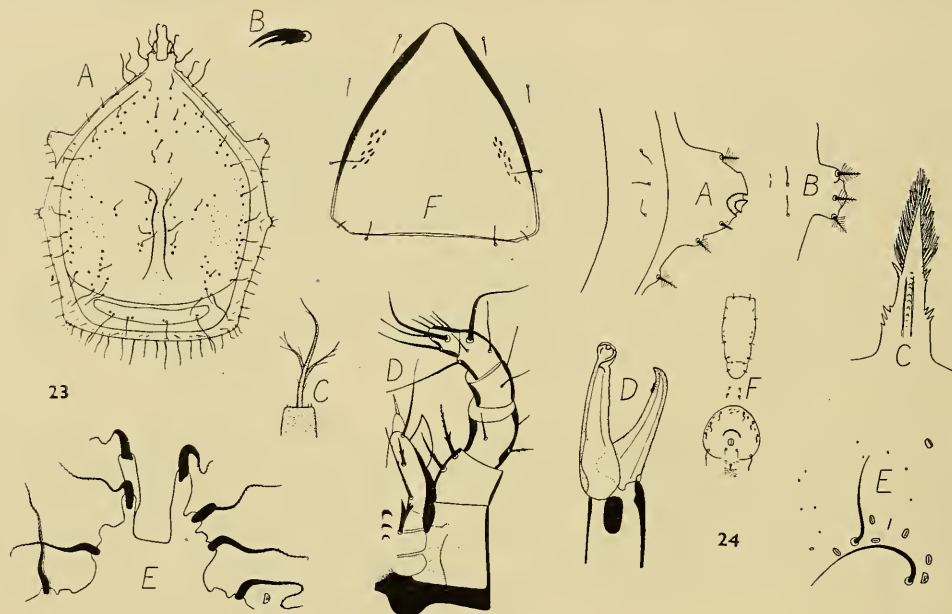
Legs long and slender as in *Eutrachytes*, except that tarsus I has no ambulacrum or claws, but only an apical sensory hair much longer than the tarsus itself.

Gnathosoma (Text-fig. 23, D): Camerostome not well developed. Hypostomal setae as follows: I stout, expanded and barbed apically, II long and slightly barbed, III short and slightly barbed, IV long and slender. Labial cornicles stout. Palpal trochanter with both internal setae barbed, otherwise palpi similar to *Eutrachytes*. Sensory seta

on palpal tarsus three-tined, but internal tine weak (Text-fig. 23, B). Tectum (Text-fig. 24, C) also similar to *Eutrachytes*, but with two groups of basal points and median row of barbules. Chelicerae (Text-fig. 24, D) very long; fixed digit with only blunt apical process with pore; pitted to receive point of movable digit.

Female.

Of similar facies and size to male. Genital shield (Text-fig. 23, F) similar in shape and position to that of *Eutrachytes*, surrounded by same five pairs of setae, and with several slit-like pores laterally. Metasternal seta present.



Text-figures 23-24.

23.—*Deraiophorus viroi*. Male. A, Dorsum; B, Tined seta on palpal tarsus; C, Tritosternum; D, Ventral view of gnathosoma; E, Anterior dorsal projection. Female. F, Genital shield. 24.—*Deraiophorus viroi*. Adult. A, Humeral projection; B, Lateral projection; C, Tectum; D, Chelicera; E, Dorsal setae and pores. Nymph. F, Ventral shields.

Nymph.

Of similar facies to adult, but without marginal and post-dorsal shields.

Venter (Text-fig. 24, F) with elongate median shield bearing short sternal, metasternal and genital setae and pores; with transverse suture and two pores between metasternal and genital setae. Anal shield as long as wide, with anterior and lateral margins broadly arched; with about five pairs of setae, and patch of small barbules posteriorly. The resemblance of this nymph ventrally to that of *Eutrachytes simplicior* is striking.

Remarks.

Only four species of this genus were listed by Trägårdh (1953). Three of these were very briefly described without illustrations by Canestrini (1897), and Berlese (1904) added a fourth. I have been unable to ascertain the status of *D. tuberculatus* Kramer listed by Canestrini (1898). The present specimens could be *D. viroi* Can., and as they agree with the recorded data they are placed here. This is the first record of the genus from Australia.

Trägårdh erected a new family, Deraiophoridae, for this genus, but it is here placed in the Eutrachytidae, together with *Eutrachytes*. Indeed, according to Camin (*in litt.*) both these genera may eventually be returned to the Prodinychidae.

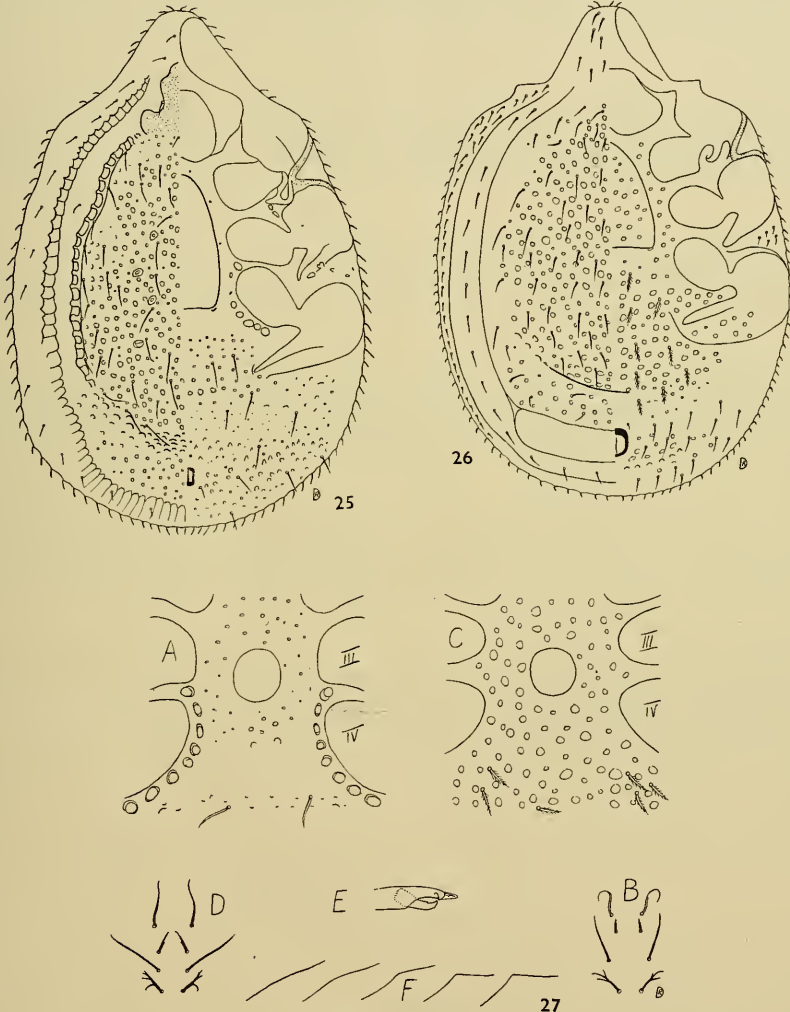
Material examined: Twenty-three males, eight females and five nymphs from leaf mould on cay, 14 and 15.viii.54, and Green Ant Is., 24.viii.54, E.N.M. coll., and from under rotting log, Green Ant Is., 14.viii.54, E.N.M. and M.J.M. coll.

Family URODINYCHIDAE.

Genus TRIGONUPODA Trägårdh.

TRIGONUPODA TERRAE-REGINAE, n. sp.

Types: Holotype female and allotype male from leaf mould on cay, 19.viii.54, E.N.M. and M.J.M. coll.



Text-figures 25-27.

25.—*Trigonuopoda terrae-reginae*. Female. Dorsum on left, venter on right. 26.—*Urodiaspis novae-hollandiae*. Female. Dorsum on left, venter on right. 27.—*Trigonuopoda terrae-reginae*. A, Male inter-coxal area; B, Hypostomal setae. *Urodiaspis novae-hollandiae*. C, Male inter-coxal area; D, Hypostomal setae; E, Chelicera; F, Antero-lateral prominences.

Female.

A dark brown, very heavily sclerotized species, 600 μ long, 420 μ wide, with body encircled by small spinules. Marginal shield with inner edge strongly scalloped, and with about sixteen pairs of short setae. Dorsal shield entire, in close contact with

marginal shield, and fused with it anteriorly; covered with small circular depressions except laterally, and with several larger irregular markings centrally. The posterior part of the dorsal shield is at a much lower level than the rest, while at the front there is a distinct depression flanked by a pair of setae. Post-dorsal shield absent. (See Text-fig. 25.)

Venter (Text-fig. 25): Genital plate reaching from level of coxae IV to near anterior margin of sternal area. Metasternal complex very reduced. Ventri-anal area covered with depressions and with several nude setae like those on dorsum. With circlet of about eight strongly marked depressions around inner margin of acetabula IV. One of these depressions is small, due to the broad genital shield near by. Peritreme between coxae II and III.

Legs typically uropodoid, retractable into distinct foveolae pedales. Without spine on femur II.

Gnathosoma enclosed in well-developed camerostome. Hypostomal setae (Text-fig. 27, B) as follows: I three-branched, II long and slender, III short and spinose, IV weakly sclerotized and possibly slightly flattened.

Male.

Very similar to female, length 617μ , breadth 414μ . Genital operculum circular, placed just behind mid-line of coxae III (Text-fig. 27, A). With circlet of eight distinct sub-equal depressions around acetabula IV, cf. female. Without spine on femur II.

Nymph.

With elongate shield between coxae, wider anteriorly, and truncate posteriorly, with circular depressions and five pairs of setae; with pair of elongate longitudinal pores in front of fifth pair of setae. Anal shield large, broadly oval, with about four pairs of marginal setae and pores; anus posteriorly placed. With three pairs of setae on posteroventral corners of body. Without circlet of depressions around acetabula IV.

Dorsal marginal shield with single row of setae, and two large setae on inner posterior edge. Dorsal shield with honeycombed pattern, and with large irregular pores on disc as in adult; without anterior depression. This nymph is very similar to that of *Urodiaspis* described below.

Remarks.

Trägårdh (1953) erected the genus *Trigonuropoda* for *Urodinychus polyphemus* Vitzthum, 1935, on the presence of a deep antero-dorsal depression. The present species may be readily recognized by the distinct circlet of pits around acetabula IV, especially in the male, and by the smooth genital shield and inconspicuous sternal setae in the female.

Material examined: The types, sixty-three paratype males, thirty-seven paratype females and three morphotype nymphs; all with same collection data.

Genus URODIASPIS Berlese.

URODIASPIS NOVAE-HOLLANDIAE. n. sp.

Types: Holotype female and allotype male from leaf mould on cay, 19.viii.54, E.N.M. coll.

Female.

A dark brown, heavily sclerotized species, 600μ long, 428μ wide, sometimes with a pair of small, blunt, angular projections (Text-fig. 27, F) near base of large anterior process. Dorsum encircled by narrow shield bearing two rows of spinulose setae. Marginal shield with about fifteen pairs of longer setae, fused with dorsal shield anteriorly, and excavated posteriorly to accept the post-dorsal shield. Dorsal shield as in *Trigonuropoda*, but without anterior depression and central markings. Post-dorsal shield transverse, in close contact with dorsal and marginal shields, and without setae. (See Text-fig. 26.)

Venter (Text-fig. 26): Genital plate with articulation just in front of mid-line of coxae IV, and extending forward to just behind level of sternal margin; covered with circular depressions, a few of which are also present between the shield and the acetabula. Ventri-anal area with similar depressions, and ciliated setae in front of level of anus, and nude setae behind these. Circular depressions also present on foveolae pedales IV.

Legs typically uropodoid, retractable into definite foveolae pedales. Without spine on femur II. Without circler of pits around acetabula IV.

Gnathosoma enclosed in definite camerostome. Hypostomal setae (Text-fig. 27, D) as follows: I four-branched, II long and slender, III stout, with single barb, IV long and simple. Fixed digit of chelicerae with apical process, and pitted to receive apical tooth of movable finger (Text-fig. 27, E).

Male.

Very similar to female, length 606 μ , breadth 436 μ . Genital operculum circular, between coxae III and IV, and surrounded by circular depressions (Text-fig. 27, C). Without circler of pits around acetabula IV. With stout spine, similar to those on coxae of *Laelaps*, on posterior margin of femur II.

Nymph.

Dorsal shield as in adult, fused anteriorly with marginal shield, which has about sixteen pairs of small setae and one pair of stronger setae posteriorly. Post-dorsal shield absent. With narrow peripheral shield as in adult, with a single row of setules.

Venter with elongate sternal shield with five pairs of small setae, two pairs of pores, and a pair of strong setae at posterior angles. With a small platelet near these strong setae, and a smaller one behind posterior margins of foveolae pedales IV, which have circular depressions as in adult. Anal shield transverse-oval, with about ten setae.

Remarks.

Trägårdh (1944) erected a new family, Urodiaspidae, for the genus *Urodiaspis*, characterized, among other features, by the presence of a posterior dorsal shield and the absence of a scalloped marginal shield. However, in 1953, he returned the genus to the Urodinychidae, characterized, among other features, by the absence of a posterior dorsal shield and the presence of a definitely scalloped marginal shield. In this family he also included *Diurodinychus* Berlese, 1916 (placed by Baker and Wharton, 1952, in the Urodiaspidae), which was originally described as having both a posterior dorsal shield and a scalloped marginal shield. The family Urodiaspidae, then, appears unnecessary. The present species is described as a *Urodiaspis*, even though the metasternal complex is much more reduced than that illustrated by Trägårdh (1944) for the genotype, *U. tecta* (Kramer, 1876). However, neither Kramer's nor Berlese's (reproduced by Baker and Wharton, 1952) original illustrations show a well-developed metasternal complex.

Material examined: The types, three pairs of paratype adults, and two morphotype nymphs, all with same collection data.

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